Section G. Maneuvering in Rivers

Overview

Introduction

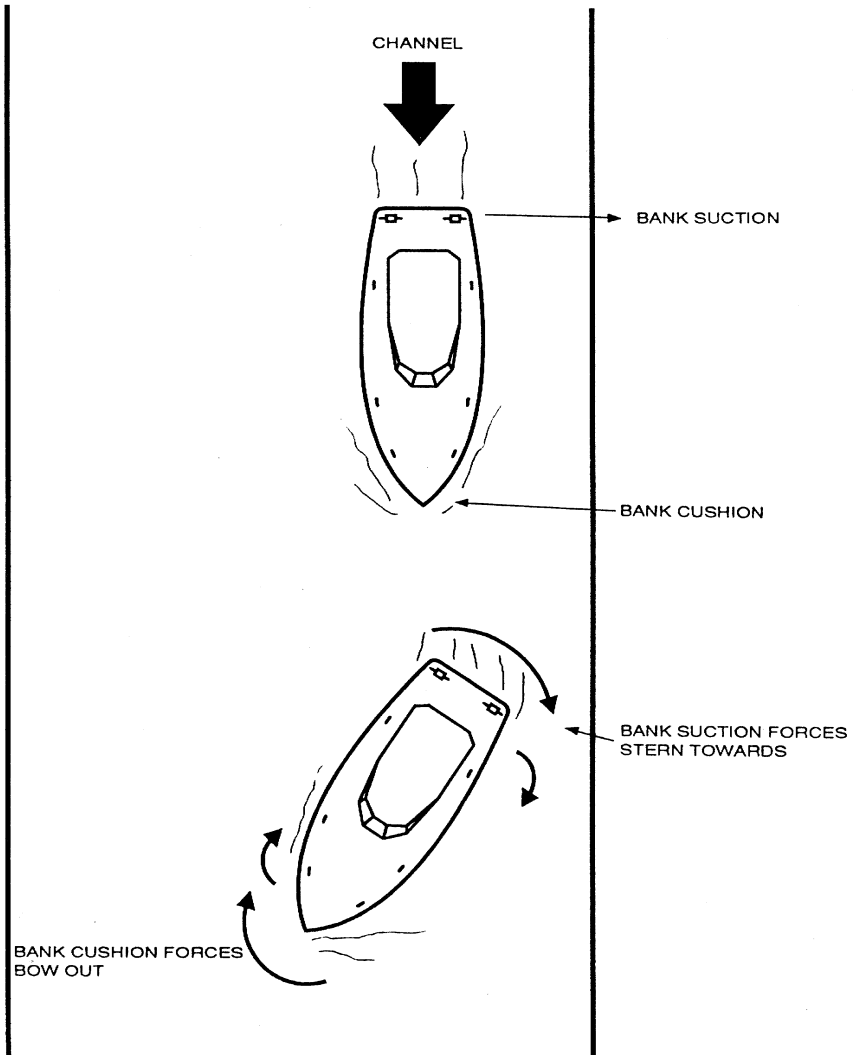
This section discusses the techniques and hazards of maneuvering in narrow rivers.

In this section

This section contains the following information:

Operating in a Narrow Channel

G.1. Bank cushion	Bank cushion occurs only when operating in close proximity to the bank and refers to a boat being pushed away from the nearest river bank. As the boat moves ahead in the river, the water between the bow and the near river bank builds up high on the side of the boat, causing the bow to move away from the bank. The bank cushion affect is especially prevalent if the draft of the boat is nearly equal to the depth of the water, or in narrow channels with steep banks.
G.2. Bank suction	Screw suction refers to the stern of a boat being pulled toward the bank. As the boat moves ahead while near the river bank, the unbalanced pressure of water on the aft quarter lowers the water level between the boat and the bank. This forces the stern to move toward the bank This screw suction effect occurs most notably with a twin-screw boat.
G.3. Combined effect	The combined effect of bank cushion and bank suction may cause a boat to take a sudden sheer toward the opposite bank (See figure 10-24).
G.3.a. Single-screw boats	A single-screw boat going at a very slow speed with its starboard side near the right bank may lose control if sheer occurs. To bring the boat under control, increase speed and add a small amount of right rudder.



Bank Cushion and Bank Suction Affects: Narrow Straight Channel
Figure 10-24

G.3.b. Twin-screw boats

A twin-screw boat under the conditions described above usually recovers from this sheer by increasing speed on the port engine, and adding right rudder.

G.4. Current

Current is the horizontal flow or movement of water in a river. Maximum current occurs during runoff and/or high water and the greatest velocity is in the area of the channel. Restricted or narrow channels tend to have a venturi effect, in that rushing water squeezes into a passage and accelerates. Current in a bend will tend to flow away from the inside point (to the outside), creating eddies, counter currents, and slack water immediately past the point. This effect will build shoals at the point or inside a bend. The prudent operator will be alert to the changing current within a waterway.

G.5. Extremely narrow channels

In extremely narrow channels where bank cushion and bank suction are expected, proceed at a very slow speed. Keep near the middle of the channel and pass other boats closer than normal. In a meeting situation in a narrow channel, reduce headway but not enough to lose steerage. On approaching the boat, apply a small amount of right rudder to head slightly toward the bank; shortly after passing the other boat, reverse the rudder and straighten up. A little right rudder may be needed to hold course against the bank cushion effect. Because of wash from passing boats, use extreme caution.

Turning in a Bend

G.6. General

Bank suction, bank cushion, currents and wind are factors that affect a boat's turn in a sharp bend in a narrow channel. Bank cushion and bank suction are strongest when the bank of a channel is steep. They are weakest when the edge of a channel shoals gradually and extends into a large area. Bank suction and bank cushion increase with the boat's speed. Channel currents are usually strongest in the bend with eddies or counter-currents and shoaling on the lee side of the point. Speed of the current is greater in deeper water than in shallow water.

G.7. Following current

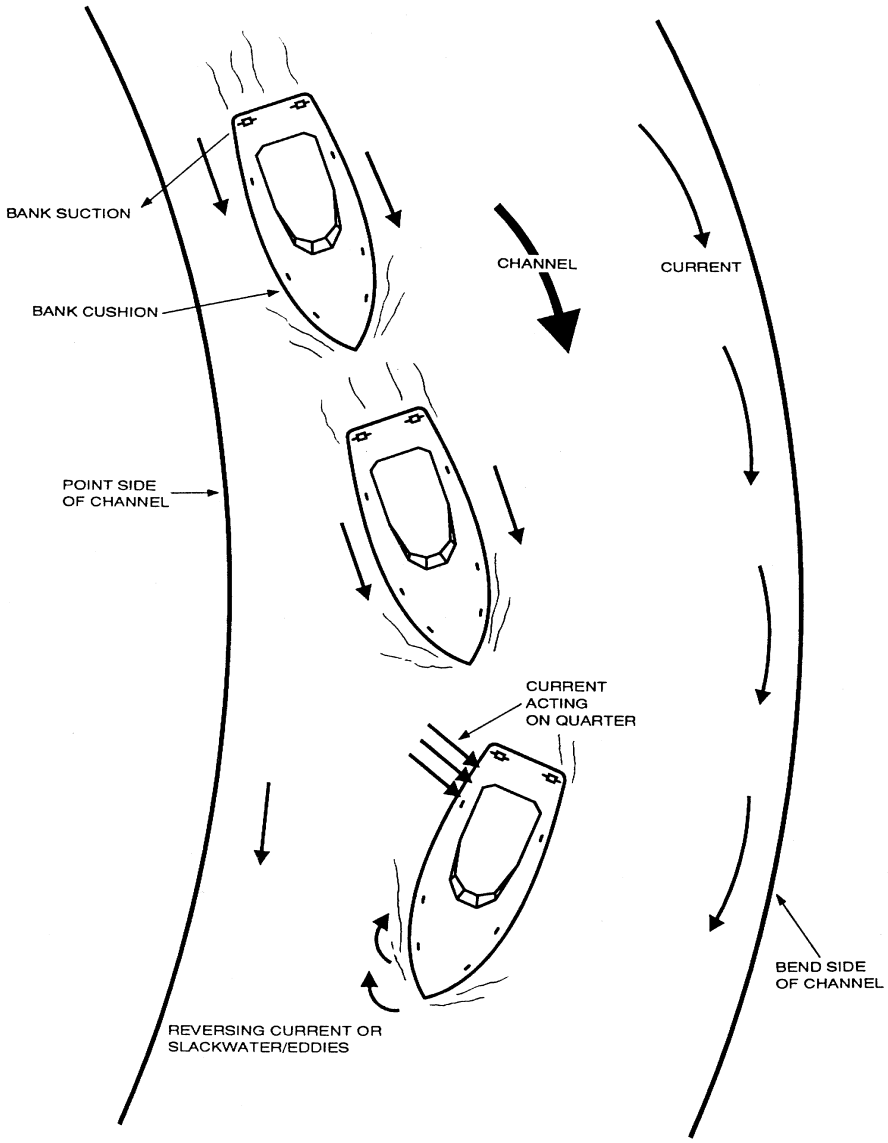
In a following current, the boat makes good speed with little help from the engines. When making a sharp turn with a following current, it is possible to make the following maneuvers:

- Hug the Point
- Stay in the Bend
- Proceed on the Bend Side, Middle of the Channel

An experienced operator can accomplish any of the three; however, the third choice, called the "Bend Side, Middle of the Channel," is the safest and therefore the preferred choice.

G.7.a. Hug the point

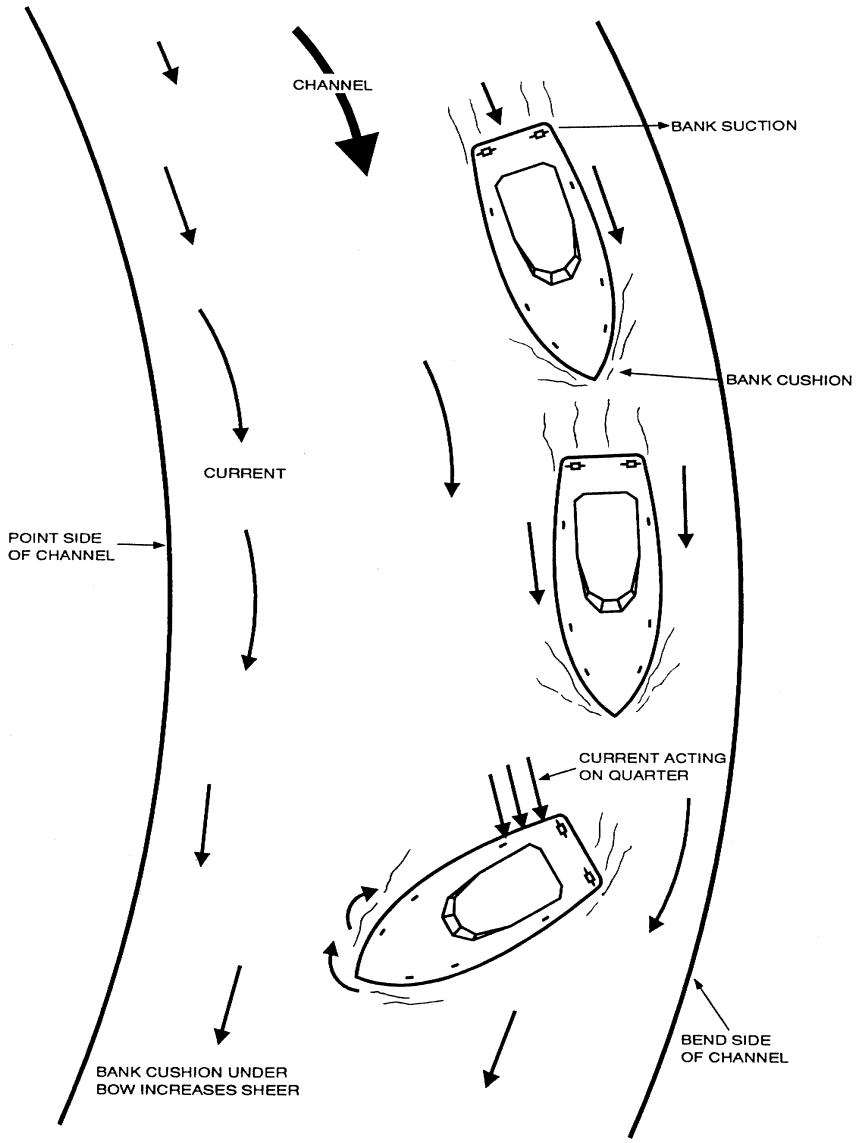
The operator carries a small amount of rudder toward the near bank to steer a straight course. As the channel begins to bend and the boat moves from the bank, less rudder will be necessary. This condition is a signal that it is time to begin the turn. However, slack water or eddies may be around the bend, making it difficult to prevent a sheer toward the near bank, especially in shallow water. The current under the quarter may affect the stern, and result in an increase in sheer (See figure 10-25).



Nudging the Point: Current Astern
Figure 10-25

G.7.b. Stay in the bend

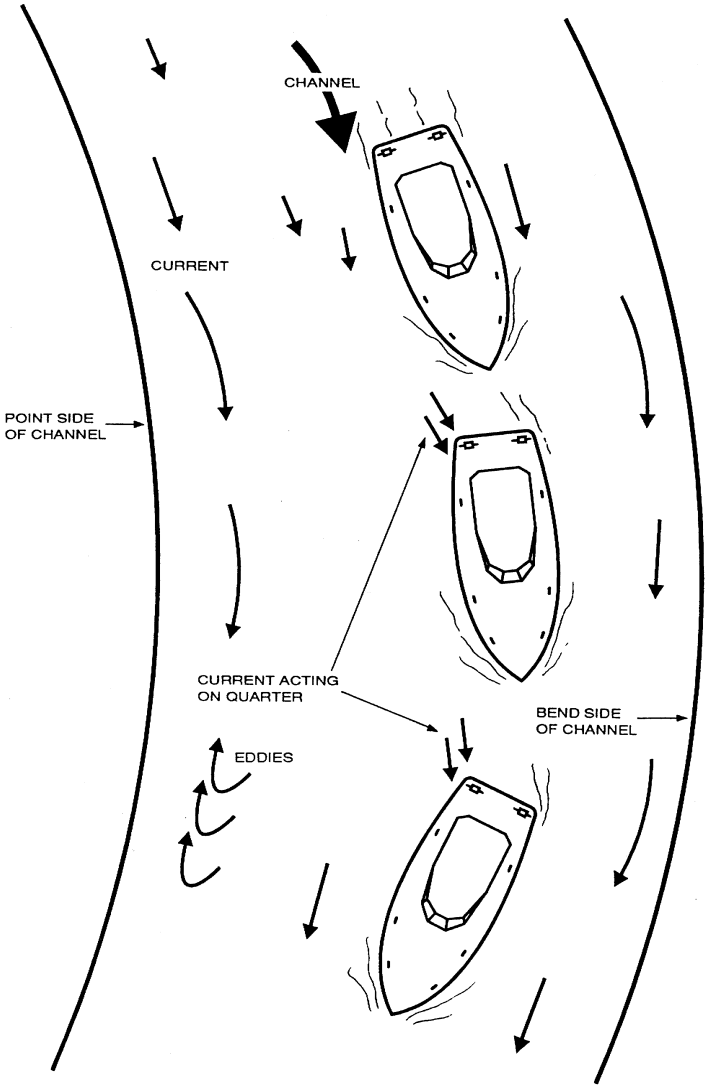
This maneuver is a turn in the bend away from the point and it takes precise timing. If done too late, the boat may ground on the bank in the bend. If done too soon, there is extreme danger that a strong and sudden sheer will occur. The bank suction on one quarter combines with the current on the other quarter to give the boat the sheer. Also, the bank cushion under the bow will increase the sheer (See figure 10-26).



Keeping in the Bend: Current Astern
Figure 10-26

G.7.c. Bend side, middle of the channel

This is the safest method when the current is following. Approach the turn steering a course toward the bend side of the middle of the channel. By doing this, the boat avoids the eddies under the point and the increase in currents in the bend. The operator can also use the force of the current against the quarter to help in the turn. A following current will force a boat toward the bend side; consequently, commence the turn early in the bend. When head currents tend to force the boat toward the point side, wait and commence the turn later (See figure 10-27).



Approaching Slightly on the Bend Side of the Channel: Current Astern
Figure 10-27